**We Claim:**

1. A vacuum cleaner comprising:

(a) a vacuum cleaner head having a dirty air inlet and an air flow path there through for transporting particulate material entrained in air passing through the air flow path, the air flow path in fluid flow communication with a source of suction: and,

(b) a filter assembly comprising a plurality of spaced apart, electrically conductive members defining an air flow path through the electronic filter, and at least one porous, non-conductive spacing member positioned in the air flow path between at least two adjacent electrically conductive members, each porous, non-conductive spacing member having first and second opposed sides, the first opposed side positioned adjacent a first electrically conductive member and the second opposed side positioned adjacent a second electrically conductive member wherein, in use, the first and second electrically conductive members have different potentials sufficient to produce polarized charges at the first and second opposed surfaces of a spacing member.

2. The vacuum cleaner as claimed in claim 1 wherein the electrically conductive members comprise porous electrically conductive plates.

3. The filter assembly as claimed in claim 1 wherein the electrically conductive plates are constructed from expanded metal.

4. The vacuum cleaner as claimed in claim 1 wherein the air flow path is a convoluted path.

5. The vacuum cleaner as claimed in claim 2 wherein the electrically conductive porous plates are chargeably connected to a current source.

6. The vacuum cleaner as claimed in claim 2 further comprising a charging member to charge the particulate material whereby the electrically conductive porous plates are inductively charged by the particulate material.

7. The vacuum cleaner as claimed in claim 2 further comprising a cyclone whereby the particulate material is tribocharged during its passage through the cyclone and the electrically conductive porous plates are inductively charged by the particulate material.

8. The vacuum cleaner as claimed in claim 1 wherein the electrically conductive members are of the same polarity.

9. The vacuum cleaner as claimed in claim 1 wherein the electrically conductive members and the non-conductive spacing members define an electronic filter which has an upstream end, a downstream end and a central portion and the central portion is operated at a higher potential then the downstream end.

10. The vacuum cleaner as claimed in claim 9 wherein the central portion is operated at a higher potential then the downstream end and the upstream end.

11. The vacuum cleaner as claimed in claim 1 wherein

adjacent electrically conductive members have a difference in potential of at least 1,000 volts.

12. The vacuum cleaner as claimed in claim 1 wherein adjacent electrically conductive members have a difference in potential which varies from about 1,000 to 2,500 volts.

13. The vacuum cleaner as claimed in claim 1 wherein adjacent electrically conductive members have a difference in potential of at least 10%.

14. The vacuum cleaner as claimed in claim 1 wherein one electrically conductive member having the highest potential is connectable to a high voltage source and the other electrically conductive members are electrically connected to the plate having the highest potential via at least one resistor whereby the flow of the current through the at least one resistor reduces the voltage of the current provided to the other plates.

15. The vacuum cleaner as claimed in claim 1 wherein one electrically conductive member having the highest potential is connectable to a high voltage source and the other electrically conductive members are charged by selecting the non-conductive layer to permit current leakage to pass there through whereby the other plates are charged by the current leakage.

16. The vacuum cleaner as claimed in claim 1 wherein the electrically conductive members and the non-conductive spacing members define an electronic filter and the electronic filter has an upstream end and a downstream end and a ground electrode is positioned adjacent the upstream end and the downstream end.

17. An electronic filter having an upstream end and a downstream end, the electronic filter comprising:

(a) a plurality of spaced apart, electrically conductive porous plates, each plate having an upstream side and a downstream side; and,

(b) a porous dielectric layer positioned between adjacent conductive plates, each electrically insulating layer having an upstream side and a downstream side.

18. The electronic filter as claimed in claim 17 wherein each electrically insulating layer comprises a plurality of non-conductive fibres.

19. The electronic filter as claimed in claim 17 wherein the plates are of the same polarity.

20. The electronic filter as claimed in claim 17 wherein the filter has an upstream end, a downstream end and a central portion and the central portion is operated at a higher potential then the downstream end.

21. The electronic filter as claimed in claim 17 wherein the filter has an upstream end, a downstream end and a central portion and the central portion is operated at a higher potential then the downstream end and the upstream end.

22. The electronic filter as claimed in claim 17 wherein adjacent plates have a difference in potential of at least 1,000 volts.

23. The electronic filter as claimed in claim 17 wherein one

plate having the highest potential is connectable to a high voltage source and the other plates are electrically connected to the plate having the highest potential via at least one resistor whereby the flow of the current through the at least one resistor reduces the voltage of the current provided to the other plates.

24. The electronic filter as claimed in claim 17 wherein one plate having the highest potential is connectable to a high voltage source and the other plates are charged by selecting the electrically insulating layer to permit current leakage to pass there through whereby the other plates are charged by the current leakage.

25. A method of filtering a gas containing entrained material comprising the step of sequentially passing the gas through a plurality of non-conductive members which are interspersed between zones of different potential wherein adjacent zones have a potential difference sufficient to induce different polarities on different portions of a non-conductive filter member positioned between the adjacent zones.

26. The method as claimed in claim 25 wherein the zones of different potential are of the same polarity and the method further comprises passing the gas through zones of different potential but of the same polarity.

27. The method as claimed in claim 25 wherein the polarity of the zones alternates between adjacent non-conductive members and the method further comprises passing the gas through zones of different polarity.

28. The method as claimed in claim 25 further comprising the step of tribocharging the entrained material prior to passing the gas

through the filter.

29. A vacuum cleaner comprising:

(a) a vacuum cleaner head having a dirty air inlet and an air flow path there through for transporting particulate material entrained in air passing through the air flow path, the air flow path in fluid flow communication with a source of suction: and,

(b) a plurality of spaced apart, electrically conductive members positioned in series in the conduit, the electrically conductive members having a conductivity selected to leave a residual charge on the particulate matter which is sufficient to retain particulate matter on the electrically conductive members.

30. The electronic filter as claimed in claim 29 wherein the electrically conductive members comprise porous electrically conductive plates.

31. The vacuum cleaner as claimed in claim 29 further comprising a charging member to charge the particulate material whereby the electrically conductive members are inductively charged by the particulate material.

32. The vacuum cleaner as claimed in claim 29 further comprising a cyclone whereby the particulate material is tribocharged during its passage through the cyclone and the electrically conductive members are inductively charged by the particulate material.

33. An electronic filter comprising:

(a) a conduit defining a gas flow path through which a gas

having entrained particulate matter travels; and,

(b) a plurality of spaced apart, electrically conductive members positioned in the conduit, the electrically conductive members having a conductivity selected to leave a residual charge on the particulate matter which is sufficient to retain the particulate matter in the electronic filter.

34. The electronic filter as claimed in claim 33 wherein the electrically conductive members comprise porous electrically conductive plates.

35. The electronic filter as claimed in claim 33 wherein the electrically conductive members are constructed from a conductive material which is coated with an electrical insulating layer.

36. The electronic filter as claimed in claim 35 wherein the coating is selected from the group consisting of an oxide of silicon, plastic, a dielectric, a ceramic and a combination thereof.

37. The electronic filter as claimed in claim 33 wherein the electrically conductive members are constructed from aluminum.

38. The electronic filter as claimed in claim 33 wherein the electrically conductive members are electrically insulated from a ground such that the particulate matter inductively charges the plates as it passes through the electronic filter.

39. The electronic filter as claimed in claim 38 wherein the electrically conductive members are constructed from stainless steel.

40. The electronic filter as claimed in claim 33 wherein the residual charge is from 700v to 10 Kv.

41. The electronic filter as claimed in claim 33 wherein the residual charge is from 2.5 to 7 Kv.

42. The electronic filter as claimed in claim 33 wherein the residual charge is from 5 to 6 Kv.

43. The electronic filter as claimed in claim 33 wherein the gas flow path is a convoluted path through the electronic filter.

44. The electronic filter as claimed in claim 34 wherein the plates are constructed from aluminum mesh and electronic filter comprises from 1 - 200 plates.

45. The electronic filter as claimed in claim 34 wherein the plates are constructed from aluminum mesh and electronic filter comprises from 20 - 120 plates.

46. The electronic filter as claimed in claim 34 wherein the plates are constructed from aluminum mesh and electronic filter comprises from 40 - 100 plates.

47. An electronic filter comprising:

(a) conduit means extending through the electronic filter through which a gas having entrained particulate matter travels; and,

(b) electrically conductive means positioned in the conduit means, the electrically conductive means having a conductivity selected to leave a residual charge on the

particulate matter which is sufficient to retain particulate matter on the electrically conductive means.

48. The electronic filter as claimed in claim 47 wherein the electrically conductive means define a series of porous members which are positioned such that the gas flows through several of the porous members as it travels through the electronic filter.

49. The electronic filter as claimed in claim 47 wherein the electrically conductive means are coated with an electrical insulating layer.

50. The electronic filter as claimed in claim 49 wherein the coating is selected from the group consisting of an oxide of silicon, plastic, a dielectric, a ceramic and a combination thereof.

51. The electronic filter as claimed in claim 47 wherein the electrically conductive means are constructed from aluminum.

52. The electronic filter as claimed in claim 47 further comprising means for electrically insulating the electrically conductive means from a ground such that the particulate matter inductively charges the plates as it passes through the electronic filter.

53. The electronic filter as claimed in claim 52 wherein the electrically conductive members are constructed from stainless steel.

54. The electronic filter as claimed in claim 47 wherein the conduit means is a convoluted path through the electronic filter.

55. The electronic filter as claimed in claim 47 wherein the

plates are constructed from aluminum mesh and electronic filter comprises from 1 - 200 plates.

56. A method of filtering a gas containing entrained particulate matter comprising the steps of providing a gas containing charged entrained particulate matter and passing the gas through a plurality of electrically conductive members whereby the potential on the conductive members and the conducitivity of the entrained particulate matter leave a residual charge on the particulate matter which is sufficient to retain the particulate matter on the electrically conductive members.

57. The method as claimed in claim 56 wherein the entrained particulate matter has the conductivity of the particulate matter is that of a dilelectric element.

58. The method as claimed in claim 56 wherein the electrically condcutive members are electrically insulated from each other and are inductively charged by the passage of entrained particulate matter therethrough.

59. The method as claimed in claim 58 further comprising the step of tribocharging the entrained material prior to passing the gas through the filter.